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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/814,713

03/31/2004

Raymond Joe

TPS-012

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37694

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06/04/2008

WOOD, HERRON & EVANS, LLP (TOKYO ELECTRON)

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EXAMINER

CHEN, BRET P

ART UNIT

PAPER NUMBER

1792

NOTIFICATION DATE

DELIVERY MODE

06/04/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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| | | | |
|------------------------------|--------------------------------------|-----------------------------------|--|
| Office Action Summary | Application No. 10/814,713 | Applicant(s) JOE ET AL. | |
| | Examiner Bret Chen | Art Unit 1792 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 April 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19, 21, 22, 26-28, 32, 33 and 35-41 is/are pending in the application.
- 4a) Of the above claim(s) 3-7, 22, 26 and 27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 8-19, 21, 28, 32, 33 and 35-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/31/04, 5/26/05</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 1-19, 21-22, 26-28, 32-33, 35-41 are pending in this application. The preliminary amendment dated 2/21/07 canceling claims 20, 23-25, 29-31, 34 and adding claims 35-41 has been entered.

Election/Restrictions

Applicant's election without traverse of generic claims 1-2, 9-19, 21 and species B claims 8, 28, 32-33, 35-41 in the reply filed on 4/17/08 is acknowledged.

Claims 3-7, 22, 26-27 are withdrawn from consideration as being directed to a nonelected invention.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-2, 8-19, 21, 28, 32-33, and 35-41 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In independent claim 1, the preamble of "a method of extending time between chamber cleaning processes" is deemed vague and confusing. It is noted that inserting a bunch of steps will always extend time between cleaning processes. Without being sarcastic, the process steps can include running to the store or even doing nothing because both of these would extend the

Art Unit: 1792

time between cleaning processes. To that end, the examiner suggests amending the preamble to appropriately reflect the applicant's intention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-2, 8-19, 21, 28, 32-33, and 35-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gupta (5,824,375). Gupta discloses a method for reducing fluorine and other sorbable contaminants in plasma reactor used in chemical vapor deposition process by the combination of a chamber clean, a plasma clean, and season film is conducted before PECVD oxide layer is deposited on a wafer positioned in the plasma reactor (col.2 lines 6-21 and Figure 4). It is noted in the Background of the Invention that when CVD is performed, particle contamination within the chamber occurs which can affect the deposition rate of the CVD layer (col.1 lines 36-52) and that is conventional to clean and season a chamber to reduce contamination (col.1 lines 63-65). Gupta specifically teaches of using a cleaning gas and to season the reactor when the substrate is not present in the chamber (col.2 lines 54-64) and then

Art Unit: 1792

positioning the wafer and depositing a silicon oxide layer (col.3 lines 3-11). Specifically, the seasoning occurs by exposing the reactor to a plasma containing TEOS (col.3 lines 8-10) and oxygen which results in the deposition of a silicon oxide layer (col.8 lines 53-64). It is the examiner's position that Gupta's seasoning step reads on the claimed limitation of an oxide film formed on a first film deposit residing on the chamber component. However, the reference fails to specifically teach the first manufacturing step.

It is noted that Gupta's Background of the invention teaches that when a CVD process is performed, it produces contamination. Gupta teaches the plasma clean and seasoning step prior to the plasma deposition of the silicon oxide layer, which the examiner considers the second manufacturing step. One skilled in the art would reasonably expect that a first manufacturing process must have been performed otherwise there would be no contamination and thus no reason to use Gupta's plasma clean and seasoning step. It would have been obvious to utilize the first manufacturing step with the expectation of obtaining similar results.

In addition, the reference fails to teach the removal of the second substrates. It is noted that the deposited silicon oxide on the wafer will ultimately be used as an integrated circuit (col.1 lines 6-8). For that to occur, the deposited wafer must be removed from the reactor. It would have been obvious to remove the wafer with the expectation of using the wafer in a semiconductor manufacturing process as taught by Gupta.

The limitations of claim 2 and 8 have been addressed above.

In claim 9, the applicant requires a temperature elevation prior to the introduction of the second substrate. This is taught in col.1 lines 13-35.

Art Unit: 1792

In claim 10, the applicant requires a specific pressure. This is taught in col.9 lines 24-27).

In claims 11-12, the applicant requires a purging step. This is taught in col.8 lines 43-45.

In claims 13-15, the applicant requires a specific temperature. This is taught in col.9 lines 9-12.

The limitations of 17-19, 21, 35-39, 41 have been addressed above.

Claims 16, 28, 32-33, 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gupta (5,824,375) in view of Discenzo (6,950,193). Gupta discloses a method for reducing fluorine and other sorbable contaminants in plasma reactor used in chemical vapor deposition process by the combination of a chamber clean, a plasma clean, and season film as noted above. However, Gupta fails to teach SiN.

Discenzo teaches a system for monitoring substrate conditions (col.1 lines 26-30) in which a semiconductor device 300 is manufactured by depositing an insulating layer 306 on a substrate 304 (col.6 lines 54-55). The insulating layer 306 can be deposited by plasma CVD and can be silicon dioxide or other suitable materials such as silicon nitride and silicon oxynitride (col.6 lines 58-67). It would have been obvious to substitute silicon nitride for the silicon oxide in Gupta's process with the expectation of obtaining similar results because Discenzo teaches that silicon nitride and silicon dioxide are suitable materials.

Art Unit: 1792

Rossman (6,589,868) discloses a method of depositing an improved seasoning film in which prior to performing a substrate processing operation, a layer of silicon is formed over an interior surface of the substrate processing chamber as opposed to silicon oxide.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bret Chen whose telephone number is (571)272-1417. The examiner can normally be reached on 7:30am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Bret Chen/

Primary Examiner, Art Unit 1792

5/31/08